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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,765	03/29/2004	Norihiro Arai	04199/LH	4800
1933	7590	07/25/2005	EXAMINER	
FRISHAUF, HOLTZ, GOODMAN & CHICK, PC 220 5TH AVE FL 16 NEW YORK, NY 10001-7708			CHEN, WEN YING PATTY	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/812,765

Applicant(s)

ARAI ET AL.

Examiner

Wen-Ying P. Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,7-11 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,7-11 and 13-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election without traverse of Group II in the reply filed on 7/14/05 is acknowledged. As indicated in the response filed, the claims readable on the elected Group II are claims 1, 3, 6-11, and 13-16. Since claim 6 depends on a non-elected claim, thus is withdrawn from consideration. Therefore, claims 1, 3, 7-11, and 13-16 remain in the current application for examination.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Iijima (US 2002/0154257).

With respect to claim 1: Iijima discloses in Figure 18 a liquid crystal display device comprising: a front substrate (element 3); a back substrate (element 2), a first electrode (element 7) formed on an internal surface of the front substrate, a second electrode (element 8) formed on an internal surface of the second substrate opposing the first substrate; a liquid crystal layer (element 4) sandwiched between the two substrates; a reflective film (element 6) provided at a back of the liquid crystal layer as to form a reflective portion within one pixel for reflecting an

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incident light; a color filter (element 20) provided on the first substrate; a liquid crystal layer thickness adjusting layer (element 22) for adjusting a thickness of the liquid crystal layer in the reflective region and the transmissive region in accordance with a thickness of the color filter; a front polarizing plate (element 13) and a back polarizing plate (element 14) arranged at a front and a back of the liquid crystal element; and a backlight (element 5) arranged at a back of the back polarizing plate.

As to claim 8: Iijima discloses in Paragraph 0194 that the liquid crystal layer thickness adjusting layer is made of a transparent insulation.

As to claims 9-11: Iijima discloses in Figure 18 that the color filter has a hole (element 21E) formed by removing a part of the color filter at a portion corresponding to the reflective portion within a pixel region and that the thickness adjusting layer fills the hole and covers the color filter.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima (US 2002/0154257) in view of Fujimori et al. (US 2003/0063244).

With respect to claim 3: Iijima discloses all of the limitations set forth in claim 1 and further disclose that the thickness of the color filter in the reflective portion is equal to the thickness of the color filter in the transmissive portion, but fails to disclose that the thickness of the liquid crystal layer in the reflective portion is thinner than the thickness of the liquid crystal in the transmissive portion. However, Fujimori et al. disclose in Figure 24 a liquid crystal display device having a liquid crystal thickness in the reflective region (Rd) thinner than the thickness in the transmissive region (Td).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display as taught by Iijima wherein the liquid crystal layer having different thickness in the reflective region and the transmissive region as taught by Fujimori et al. since Fujimori et al. teach that with the varied liquid crystal layer

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thickness allows precise and easy control of the optical density of the color filter layer in the reflective region (Paragraph 0205).

As to claim 13: Fujimori et al. further disclose in Figure 24 that the reflective layer (element 24) has a reflective surface on which depressions and protusions are formed as to improve the display quality.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima (US 2002/0154257) in view of Baek (US 2002/0041351).

Iijima discloses all of the limitations set forth in claim 1, but fails to specifically disclose that the liquid crystal element comprises a homogeneous liquid crystal layer. However, Baek discloses in the Abstract a transfective liquid crystal display device including a homogeneous liquid crystal.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Iijima wherein the liquid crystal layer is of a homogeneous liquid crystal as taught by Baek, since Baek teaches that by having homogeneous liquid crystal allows the display to exhibit an optical retardation when the voltage is applied so that a high contrast ratio can be achieved (Abstract).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima (US 2002/0154257) in view of Ozawa et al. (US 2004/0004681).

Iijima discloses all of the limitations set forth in claim 1, but fails to specifically disclose that the liquid crystal layer in the reflective portion exhibits a retardation of  $\frac{1}{4}$  wavelength and

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the transmissive portion exhibits a retardation of  $\frac{1}{2}$  wavelength to a transmitting light in the non electric field state. However, Ozawa et al. disclose in the Abstract a transfective liquid crystal display device wherein in transmissive display regions and the reflective display regions are set to a  $\frac{1}{2}$  wavelength and a  $\frac{1}{4}$  wavelength respectively, with no voltage applied.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Iijima wherein the liquid crystal layer in the reflective portion exhibits a retardation of  $\frac{1}{4}$  wavelength and the transmissive portion exhibits a retardation of  $\frac{1}{2}$  wavelength to a transmitting light in the non electric field state as taught by Ozawa et al. since Ozawa et al. teach that with such configuration of the liquid crystal layer an improved display brightness in the transmission mode and an excellent visibility can be achieved (Abstract).

Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iijima (US 2002/0154257) and Ozawa et al. (US 2004/0004681) in view of Baek (US 2002/0041351).

Iijima and Ozawa et al. disclose all of the limitations set forth in claim 14 and Iijima further discloses in Figure 18 that the liquid crystal display device further comprising: a front retardation plate (element 17) and a back retardation plate (element 18) arranged between the polarizing plates and the liquid crystal layer and a scattering reflective plate (element 16) arranged between the front polarizing plate and the liquid crystal layer.

Iijima and Ozawa et al. fail to specifically disclose that the slow axes of the retardation plates are orthogonal to each other and that the transmission axes of the polarizing plates are orthogonal to each other.

However, Baek discloses in Figure 6 a transfective display device comprising of lower and upper retardation plates (elements 142 and 145) and lower and upper polarizing plates (elements 152 and 155), wherein the slow axes of the retardation plates are perpendicular to each other and the transmission axes of the polarizing plates are perpendicular to each other (Paragraph 0081) so as to offset the optical retardation of the liquid crystal layer.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Iijima and Ozawa et al. wherein the slow axes of the retardation plates are orthogonal to each other and that the transmission axes of the polarizing plates are orthogonal to each other as taught by Baek, since Baek teaches that such configuration of the polarizing plates and the retardation plates help to prevent light leakage when displaying the dark state of the LCD device (Paragraph 0081).

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Ying P. Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.




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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wen-Ying P Chen  
Examiner  
Art Unit 2871

WPC  
7/21/05

  
ANDREW SCHECHTER  
PRIMARY EXAMINER